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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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In re application of: Mark Holst, et al.

Title : "EFFLUENT GAS STREAM TREATMENT SYSTEM HAVING UTILITY  
FOR OXIDATION TREATMENT OF SEMICONDUCTOR  
MANUFACTURING EFFLUENT GASES"

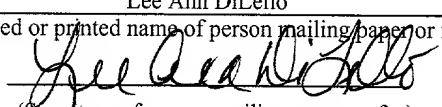
U.S. Serial No.: New Divisional of Prior Copending U.S. Patent Application No.  
09/400,662

Prior Application Filing Date: September 20, 1999

Prior Application Group Art Unit: 1764

Prior Application Examiner: H. Tran

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Assistant Commissioner for Patents  
Washington, D.C.20231

PRELIMINARY AMENDMENT

Sir:

Prior to examining the instant application on the merits, please amend the specification as follows:

IN THE SPECIFICATION

Please amend the specification by inserting before the first line the sentence --This is a division of U.S. Application No. 09/400,662, which is a continuation of U.S. Application No. 08/775,838, now U.S. Patent No. 5,955,037--.

IN THE CLAIMS

Cancel claims 2-60:

Add new claims 61-110 as follows:

61. A method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools, comprising the steps of:
- removing water soluble gases from the effluent fluid stream;
- oxidizing at least a portion of the oxidizable components of the effluent fluid stream; and
- removing acidic components from the effluent fluid stream.
62. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 61, further comprising removing particulates in the step of removing water soluble gases from the effluent fluid stream.
63. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 61, further comprising removing particulates in the step of removing acidic components from the effluent fluid stream.
64. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 61, wherein the step of oxidizing comprises the steps of:
- mixing the effluent fluid stream with an oxidizer medium; and
- heating the effluent fluid stream.

65. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 61, wherein the step of oxidizing comprises using a catalytic oxidizer.
66. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 61, wherein the step of oxidizing comprises using a thermal oxidizer.
67. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 62, wherein the step of removing particulates and water soluble gases comprises using a wet spray tower.
68. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 67, wherein said wet spray tower comprises an inert-gas-assisted atomizing nozzle.
69. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 63, wherein the step of removing particulates and acidic components comprises using a wet spray tower.
70. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 69, wherein the wet spray tower comprises a demister mesh packing.
71. An apparatus for treating an effluent fluid stream from one or more semiconductor manufacturing process tools, comprising:
- a pre-treatment unit, downstream from at least one semiconductor manufacturing process tool, arranged to remove water soluble components from the effluent fluid stream;
  - an oxidizing unit, downstream from the pre-treatment unit, arranged to elevate the temperature of the effluent fluid stream, utilize a hydrogen source to effect destruction of at least a portion of halogen-containing components of the effluent fluid stream and effect oxidation of at least a portion of the oxidizable components of the effluent fluid stream; and
  - a post-treatment unit, downstream from the oxidizing unit, arranged to remove acidic components from the effluent fluid stream.
72. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 71, wherein said halogen-containing components contain fluorine.

73. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 71, wherein said halogen-containing components contain chlorine.
74. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 71, wherein said halogen-containing components comprise perfluorocarbons.
75. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 71 wherein the pre-treatment unit is arranged to remove particulates from the effluent fluid stream.
76. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 71 wherein the post-treatment unit is arranged to remove particulates from the effluent fluid stream.
77. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 71 further comprising a quench unit, downstream from the oxidizing unit and upstream from the post-treatment unit, arranged to lower the temperature of the effluent fluid stream.
78. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 77 wherein the quench unit is constructed using a corrosion resistant alloy.
79. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 71 wherein the oxidation unit is constructed using a high temperature oxidation-resistant alloy.
80. An apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools, comprising:
- an oxidizing unit, downstream from at least one semiconductor manufacturing process tool, arranged to elevate the temperature of the effluent fluid stream, utilize a hydrogen source to effect destruction of at least portion of the halogen-containing components of the effluent fluid stream and effect oxidation of at least a portion of the oxidizable components of the effluent fluid stream;

a post-treatment unit, downstream from the oxidizing unit, arranged to remove acidic components from the effluent fluid stream.

81. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 80 wherein the post-treatment unit is arranged to remove particulates from the effluent fluid stream.
82. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 80 further comprising a quench unit, downstream from the oxidizing unit and upstream from the post-treatment unit, arranged to lower the temperature of the effluent fluid stream.
83. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 82 wherein the quench unit is constructed using a corrosion resistant alloy.
84. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 80 wherein the oxidizing unit is constructed using a high temperature oxidation-resistant alloy.
85. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 82 wherein water vapor from the quench unit is recycled back to the oxidizing unit for utilization as a hydrogen source to effect destruction of at least portion of the halogen-containing components of the effluent fluid stream.
86. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 77 wherein water vapor from the quench unit is recycled back to the oxidizing unit for utilization as a hydrogen source to effect destruction of at least portion of the halogen-containing components of the effluent fluid stream.
87. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claims 71 wherein water vapor is used as a hydrogen source to effect destruction of at least portion of the halogen-containing components of the effluent fluid stream.
88. A method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools using a system that includes an oxidizing unit, comprising the steps of:

effecting, in the oxidizing unit, the destruction of at least a portion of the halogen-containing components of the effluent fluid stream using a hydrogen source and the oxidation of at least a portion of the oxidizable components of the effluent fluid stream; and

removing acidic components from the effluent fluid stream.

89. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools using a system that includes an oxidizing unit of claim 88, wherein particulates are removed in the step of removing acidic components from the effluent fluid stream.

90. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools using a system that includes an oxidizing unit of claim 88, wherein the step of effecting oxidation comprises the steps of:

mixing the effluent fluid stream with an oxidizer medium and water vapor; and

heating the effluent fluid stream.

91. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools using a system that includes an oxidizing unit of claim 88, wherein the step of effecting oxidation comprises using a catalytic oxidizer.

92. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools using a system that includes an oxidizing unit of claim 88, further comprising the step of:

removing particulates and water soluble gases from the effluent fluid stream upstream of the oxidizing unit.

93. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools using a system that includes an oxidizing unit of claim 92, wherein the step of removing particulates and water soluble gases upstream of the oxidation unit comprises using a wet spray tower including an inert-gas-assisted atomizing nozzle.

94. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools using a system that includes an oxidizing unit of claim 88, wherein the step of

removing particulates and acidic components comprises using a wet spray tower including a demister mesh packing.

95. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools using a system that includes an oxidizing unit of claim 88, further comprising the step of:

recycling water vapor from the quench unit back to the oxidizing unit for utilization as a hydrogen source to effect destruction of at least a portion of the halogen-containing components of the effluent fluid stream.

96. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools using a system that includes an oxidizing unit of claim 88 wherein water vapor is used as a hydrogen source to effect destruction of at least portion of the halogen-containing components of the effluent fluid stream.

97. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claims 80 wherein water vapor is used as a hydrogen source to effect destruction of at least portion of the halogen-containing components of the effluent fluid stream.

98. An apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools, comprising:

a first scrubber downstream from at least one semiconductor manufacturing process tool;

an oxidizing unit, downstream from the first scrubber; and

a second scrubber, downstream from the oxidizing unit.

99. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 98 further comprising a quench unit downstream from the oxidizing unit and upstream from the second scrubber.

100. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 98 wherein the first scrubber comprises a wet spray tower including an inert-gas-assisted atomizing nozzle.

101. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 98 wherein the second scrubber comprises a wet spray tower including a demister mesh packing.
102. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 99 wherein the quench unit comprises an atomizing nozzle.
103. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 98 wherein the second scrubber comprises a wet spray tower arranged to lower the temperature of the effluent fluid stream to below ambient temperature by using an aqueous scrubbing medium of temperature effective therefor.
104. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 98 wherein the oxidizing unit comprises a catalytic oxidizer.
105. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 98 wherein the oxidizing unit comprises a thermal oxidizer.
106. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 98 wherein the oxidizing unit is arranged to mix the effluent fluid stream with an oxidizer medium.
107. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 106 wherein the oxidizer medium is selected from the group consisting of: air, oxygen, and other oxygen containing gases.
108. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 98 wherein the semiconductor manufacturing process tools are selected from the group consisting of CVD tools, etch tools, and ion implant tools.
109. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 98 wherein the oxidizing unit is arranged to elevate the temperature of the effluent fluid stream, utilize a hydrogen source to effect destruction of at least portion of the halogen-containing components of the effluent fluid stream and effect oxidation of at least a portion of the oxidizable components of the effluent fluid stream.



110. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claims 109 wherein water vapor is used as a hydrogen source to effect destruction of at least portion of the halogen-containing components of the effluent fluid stream.

**REMARKS**

This is a divisional of application serial no. 09/09/400,662, now allowed

Claims 2-60 of the parent application have been cancelled.

Applicants have added new claims 61-124.

The claims now pending in the application are claims 1 and 61-110. It therefore is requested that examination of the application proceed on the basis of such claims 1 and 61-110.

Applicants have provided a marked up copy of the specification and claims in Appendix A; a clean copy of the first page of the specification in Appendix B and a clean set of the pending claims in Appendix C.

An early examination on the merits is earnestly solicited.

Respectfully submitted,



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## **APPENDIX A**

### **MARKED UP COPY OF SPECIFICATION AND CLAIMS**

In the Claims

1. An effluent gas stream treatment system, comprising:

means for pre-treating the effluent gas stream, to enhance its character for subsequent oxidation treatment;

an oxidation unit for oxidizing at least a portion of the oxidizable components of the effluent gas stream to abate such oxidizable components;

means for post-oxidation treatment of the effluent gas stream, to enhance the character of the effluent gas stream for discharge from the treatment system.

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## **APPENDIX B**

### **CLEAN COPY OF THE FIRST PAGE OF THE SPECIFICATION**

## **APPENDIX C**

### **CLEAN COPY OF PENDING CLAIMS**

1. An effluent gas stream treatment system, comprising:

means for pre-treating the effluent gas stream, to enhance its character for subsequent oxidation treatment;

an oxidation unit for oxidizing at least a portion of the oxidizable components of the effluent gas stream to abate such oxidizable components;

means for post-oxidation treatment of the effluent gas stream, to enhance the character of the effluent gas stream for discharge from the treatment system.

61. A method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools, comprising the steps of:

removing water soluble gases from the effluent fluid stream;

oxidizing at least a portion of the oxidizable components of the effluent fluid stream; and

removing acidic components from the effluent fluid stream.

62. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 61, further comprising removing particulates in the step of removing water soluble gases from the effluent fluid stream.

63. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 61, further comprising removing particulates in the step of removing acidic components from the effluent fluid stream.

64. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 61, wherein the step of oxidizing comprises the steps of:

mixing the effluent fluid stream with an oxidizer medium; and

heating the effluent fluid stream.

65. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 61, wherein the step of oxidizing comprises using a catalytic oxidizer.
66. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 61, wherein the step of oxidizing comprises using a thermal oxidizer.
67. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 62, wherein the step of removing particulates and water soluble gases comprises using a wet spray tower.
68. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 67, wherein said wet spray tower comprises an inert-gas-assisted atomizing nozzle.
69. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 63, wherein the step of removing particulates and acidic components comprises using a wet spray tower.
70. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 69, wherein the wet spray tower comprises a demister mesh packing.
71. An apparatus for treating an effluent fluid stream from one or more semiconductor manufacturing process tools, comprising:

a pre-treatment unit, downstream from at least one semiconductor manufacturing process tool, arranged to remove water soluble components from the effluent fluid stream;

an oxidizing unit, downstream from the pre-treatment unit, arranged to elevate the temperature of the effluent fluid stream, utilize a hydrogen source to effect destruction of at least a portion of halogen-containing components of the effluent fluid stream and effect oxidation of at least a portion of the oxidizable components of the effluent fluid stream; and

a post-treatment unit, downstream from the oxidizing unit, arranged to remove acidic components from the effluent fluid stream.



72. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 71, wherein said halogen-containing components contain fluorine.
73. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 71, wherein said halogen-containing components contain chlorine.
74. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 71, wherein said halogen-containing components comprise perfluorocarbons.
75. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 71 wherein the pre-treatment unit is arranged to remove particulates from the effluent fluid stream.
76. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 71 wherein the post-treatment unit is arranged to remove particulates from the effluent fluid stream.
77. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 71 further comprising a quench unit, downstream from the oxidizing unit and upstream from the post-treatment unit, arranged to lower the temperature of the effluent fluid stream.
78. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 77 wherein the quench unit is constructed using a corrosion resistant alloy.
79. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 71 wherein the oxidation unit is constructed using a high temperature oxidation-resistant alloy.
80. An apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools, comprising:

an oxidizing unit, downstream from at least one semiconductor manufacturing process tool, arranged to elevate the temperature of the effluent fluid stream, utilize a hydrogen source to effect

destruction of at least portion of the halogen-containing components of the effluent fluid stream and effect oxidation of at least a portion of the oxidizable components of the effluent fluid stream;

a post-treatment unit, downstream from the oxidizing unit, arranged to remove acidic components from the effluent fluid stream.

81. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 80 wherein the post-treatment unit is arranged to remove particulates from the effluent fluid stream.
82. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 80 further comprising a quench unit, downstream from the oxidizing unit and upstream from the post-treatment unit, arranged to lower the temperature of the effluent fluid stream.
83. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 82 wherein the quench unit is constructed using a corrosion resistant alloy.
84. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 80 wherein the oxidizing unit is constructed using a high temperature oxidation-resistant alloy.
85. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 82 wherein water vapor from the quench unit is recycled back to the oxidizing unit for utilization as a hydrogen source to effect destruction of at least portion of the halogen-containing components of the effluent fluid stream.
86. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 77 wherein water vapor from the quench unit is recycled back to the oxidizing unit for utilization as a hydrogen source to effect destruction of at least portion of the halogen-containing components of the effluent fluid stream.
87. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claims 71 wherein water vapor is used as a hydrogen source to effect destruction of at least portion of the halogen-containing components of the effluent fluid stream.

88. A method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools using a system that includes an oxidizing unit, comprising the steps of:
- effecting, in the oxidizing unit, the destruction of at least a portion of the halogen-containing components of the effluent fluid stream using a hydrogen source and the oxidation of at least a portion of the oxidizable components of the effluent fluid stream; and
- removing acidic components from the effluent fluid stream.
89. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools using a system that includes an oxidizing unit of claim 88, wherein particulates are removed in the step of removing acidic components from the effluent fluid stream.
90. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools using a system that includes an oxidizing unit of claim 88, wherein the step of effecting oxidation comprises the steps of:
- mixing the effluent fluid stream with an oxidizer medium and water vapor; and
- heating the effluent fluid stream.
91. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools using a system that includes an oxidizing unit of claim 88, wherein the step of effecting oxidation comprises using a catalytic oxidizer.
92. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools using a system that includes an oxidizing unit of claim 88, further comprising the step of:
- removing particulates and water soluble gases from the effluent fluid stream upstream of the oxidizing unit.
93. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools using a system that includes an oxidizing unit of claim 92, wherein the step of removing particulates and water soluble gases upstream of the oxidation unit comprises using a wet spray tower including an inert-gas-assisted atomizing nozzle.

94. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools using a system that includes an oxidizing unit of claim 88, wherein the step of removing particulates and acidic components comprises using a wet spray tower including a demister mesh packing.
95. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools using a system that includes an oxidizing unit of claim 88, further comprising the step of:
- recycling water vapor from the quench unit back to the oxidizing unit for utilization as a hydrogen source to effect destruction of at least a portion of the halogen-containing components of the effluent fluid stream.
96. The method for treating the effluent fluid stream from one or more semiconductor manufacturing process tools using a system that includes an oxidizing unit of claim 88 wherein water vapor is used as a hydrogen source to effect destruction of at least portion of the halogen-containing components of the effluent fluid stream.
97. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claims 80 wherein water vapor is used as a hydrogen source to effect destruction of at least portion of the halogen-containing components of the effluent fluid stream.
98. An apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools, comprising:
- a first scrubber downstream from at least one semiconductor manufacturing process tool;
- an oxidizing unit, downstream from the first scrubber; and
- a second scrubber, downstream from the oxidizing unit.
99. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 98 further comprising a quench unit downstream from the oxidizing unit and upstream from the second scrubber.
100. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 98 wherein the first scrubber comprises a wet spray tower including an inert-gas-assisted atomizing nozzle.

101. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 98 wherein the second scrubber comprises a wet spray tower including a demister mesh packing.
102. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 99 wherein the quench unit comprises an atomizing nozzle.
103. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 98 wherein the second scrubber comprises a wet spray tower arranged to lower the temperature of the effluent fluid stream to below ambient temperature by using an aqueous scrubbing medium of temperature effective therefor.
104. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 98 wherein the oxidizing unit comprises a catalytic oxidizer.
105. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 98 wherein the oxidizing unit comprises a thermal oxidizer.
106. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 98 wherein the oxidizing unit is arranged to mix the effluent fluid stream with an oxidizer medium.
107. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 106 wherein the oxidizer medium is selected from the group consisting of air, oxygen, and other oxygen containing gases.
108. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 98 wherein the semiconductor manufacturing process tools are selected from the group consisting of CVD tools, etch tools, and ion implant tools.
109. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claim 98 wherein the oxidizing unit is arranged to elevate the temperature of the effluent fluid stream, utilize a hydrogen source to effect destruction of at least portion of the halogen-containing components of the effluent fluid stream and effect oxidation of at least a portion of the oxidizable components of the effluent fluid stream.

110. The apparatus for treating the effluent fluid stream from one or more semiconductor manufacturing process tools of claims 109 wherein water vapor is used as a hydrogen source to effect destruction of at least portion of the halogen-containing components of the effluent fluid stream.